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FORWARD

ATPD 2294 for the Advanced Aviation Forward Area I lefueling System states that "The AAFARS shall be configured and stored in 1 RICON container(s) for fast deployment. TRICON container(s) shall be provided for each AAFARS and shall be in accordance with ATPD 2298, dated 20 December 2001".

The US Army currently is procuring a large number of TRICON containers from Charleston Marine Containers incorporated (CMCI) of Charleston South Carolina. These containers are being procured in accordance with a different version of ATPD 2298. The purpose of this deviation is to identify and list the differences between the Qualified TRICON container and the requirements of ATPD 2298 dated 20 December 2001, included is the engineering rationals for accepting the qualified TRICON containers, for transporting the AAFARS systems, as they have been qualified by CMCI.

DISCUSSION

A number of differences exist between ATPD revisior 1 and the unit qualified by CMCI. The majority of which relate to the testing of the container for such items as corrosion protection, coating adherence, weather reciness etc. There are also a number of minor differences dealing with sealing, labeling, number of tie downs and number of vertical industry tracks per TR* CON. The following discussion addresses each of these items individual:

3.2.2 Protection And Coating Adherence.

ATPD 2298 Rev 1 states. "A proposed alternate des gri shall be compared to a galventzed sample (as described above) using ASTI i D522 and GM 9540P (Accelerated Corrosion Test) Method B 120 cycles, c r until prior failure of one of the Items with defects such as extensive corrosion a scribe or significant penetration of base material".

The qualified TRICON was tested in accordance will ASTM D 5894-96 substituted with a Gravelometer Test. The Multi-Test Gravelometer is designed for testing automotive materials and coatings for resistance to gravel impact.

The GM 9540P accelerated test is a combination of + selt fog and high humidity test. The test applies a 1.25% selt solution as a mis. In four consecutive intervals over a 4.5 hour period followed by eight hours in high humidity @ 49 \pm 2C and an eight-hour dryoff at 60 \pm 2C. A 24-hr test period cons littles one test cycle.

ASTMD 5894-96 teet is a combination of alternating periods of fluorescent UV/condensation and cyclic selt fog/dry chember.

ASTMD 5894-96 "that no single exposure test can be apacified as a complete simulation for actual use conditions in outdoor environments". "Therefore even if results from a specific article test are found to be useful for comparing the relative durability of materials exposed in a particular exterior environment it.

cannot be assumed that they will be useful for determ ning relative durability for a different environment".

The ATPD attempts through the use of the ASTM testing to verify that the durability of the coating provided by CMCI is adequate to protect the TRICON container from most environments. Both testing methods attempt to replicate an accelerated rate of the actual conditions the TRICON will be exposed to. Substituting ASTM D 5894-96 with ASTM D522 and CiM 9540P does not guarantee that coating adherence is better or worse ciny that under the conditions tested was a particular specimen found to be acceptable.

3.3.3 Side Walls And End Walls.

ATPD 2296 Rev 1 states Strength requirements for a intainers shall meet ISO 1496-1. The end walls and side walls shall withstand loading in accordance with ISO 1496-1 with payload (Pa) of 12,200 pounds.

The qualified TRICON strength requirements were in accordance with ISO 1496-1, which is as follows "Strength requirements for corr siners shall meet ISO 1496-1. The end walls and sidewells shall withstand loads g in accordance with ISO 1498-1". The only difference being the stipulation of he 12,200 internal load.

ISO 1496-1 states that for the strength of end wall to t the container shall have an internal loading of 0.4 $P_{\rm g}$ or 4/10ths of the maximum psyload. For the strength of sidewalls test the container shall have an internal loading of 0.6 $P_{\rm g}$ or 6/10ths of the maximum psyload.

The loading test for the qualified TRICON was perfor ned for both test with an internal load of 0.6. The unit was tested and passed with a load in excess of the requirements of ISO 1496-1.

3.3.5 Roof

ATPD 2298 Rev 1 states." The roof shall be self-draving and its roof strength (per ISO 1496-1) shall allow less than ¼ inch delied on. When the TRICON is tested in accordance with 1496-1, Weatherproofnes: test, and is level to within 5 decrees, the roof shall retain not more than 1/8 inch of water in an hour.

The qualified TRICON requirement was "The roof of all be self-draining and the roof strength (per ISO 1496-1) shall meet the requirements of ISO 1496-1.

There has been no change to the loading of the root during testing only that it should have less than 1/2 inch deflection when tested. The unit was tested and passed the requirements of ISO 1496-1 with the exception that no deflection is specified by ISO 1496-1.

The additional requirement during the "weatherproot test test", the unit should be "level within 5 degrees", and "the roof shall retain no more the 1/5 inch of water and hour". This is specifying a condition of the test: et changing the design or manufacture of the container.

The qualified container met the conditions of ISO 145 3-1, the weatherproofness, which states "Upon completion of the test no water at all have leaded into the container".

3.3.6 Seems.

ATPD 2298 Rev 1 states "All TRICON seams shall be permanent. Seams shall be seeled with AMS 3378".

The qualified unit did not have this specific requirems at but was qualified in accordance with the weatherproofness test of ISO 14 36-1 which states "no water shall have leaked into the container" as acceptance (Iteria for the test which the unit successfully passed.

3.3.9 Universal Shelving Brackets

ATPD 2298 Rev 1 states "Each TRICON shall contail three Series E vertical tracks"

The qualified unit contains five Series E vertical track :"

Other than the additional weight from 2 vertical track: there is added versatility by being able to adjust the shelving and loading layo it for weight and belance of the container. A requirement of the helicopter aling commentation.

3.4.4 Tie-downs.

ATPD 2298 Rev 1 states "A total of 34 tie-downs she I be provided in each container as deploted in Figure 1. Four tie-downs shall be provided and welded on the bottom rail and four on the top rail of each enclosed wall and five tie-downs on each corner post opposite the door opening".

The qualified unit requirements are "A total of 35 tie- lowns shall be provided in each container as depicted in Figure 1. Four tie-downs shall be provided and welded on the bottom side rall and four on the top at a rall of each side well 5 each top and bottom from and rall and five tie-downs on each corner post opposite the door opening".

Other than the additional weight from 2 tie downs the re is added versetility by being able to adjust the shelving and loading layout: or weight and balance of the container. A requirement of the helicopter aling demonstration.

3.4.7 Convention for Safe Containers (CSC) cert Section.

ATPD 2298 Rev 1 states The TRICON container de. Ign and each TRICON shall be certified in accordance with 49 CFR, Parts 450 th rough 453. The Nine High Stacking Test shall be for three (3) TRICONS couple d together supporting a stack of eight fully loaded ISO 558, 1C containers.

CMCI states that the "TRICON was certified by Lloy s Register North America, Inc., approved by the U.S. Coastguard.

3.5.1 Chemical Agent Registent Costing (CARC).

ATPD 2296 Rev. 1 states 3.5.1 CARC paint shall be in accordance with Mil.-C-53072 on all exterior surfaces of the container except for the connecting couplers.

The qualified unit requirement is CARC paint shall be in accordance with MIL-C-53072 or MIL-DTL-64159, type 1, on all exterior surfe see of the container except for the connecting couplers.

MIL-DTL-64159 is the specification for CARC paint where MIL-C-53072 specifies the application of the CARC paint. Provider the correct paint was applied in accordance with the suppliers directions the unit should be acceptable.

3.5.6 Consolidated data plate.

ATPD 2298 Rev 1 states "The Consolidated Data Pk to shall be in accordance with ISO 6359. The height of the data plate should a main at or near the minimum 200 mm specified in the ISO. The location of the consolidated date plate shall be as depicted in Figure 3".

CMCI states that specification ISO 6359 does not exist, BAE SYSTEMS was also unable to locate a copy of ISO 6359. It was deleted and replaced by the following, which was added to section 3.5.5 "Figure 4.5D and Figure 4.5E of MILHOBK-138A shell be used for guidance for the forms; of the Consolidated Data Plate. The location of the data plate shell be as dep' sted in Figure 3.

The CMCI data plate dimensions are 258 (high) X 200 (wide) and in the location depicted in figure 3.

4.5.3 Corresion test.

ATPD 2298 Rev 1 states "The TRICON shall be evaluated for corrosion prevention and control by the GM 9540P accelerator corrosion test for 120 cycles. A sample construction of part of a TRICON container to include the doors, four corners and at least three feet of roof, fig or and side wall extension from the doors may be tested if deeired, instead of a complete TRICON, to reduce test chamber size required. Four connecting couplers shall also be tested. Nonconformance to 3.2.1 shall constitute fall use of this test".

The qualified unit was tested in accordance with AS' M D5894-96. Coupons provided by CMCI, to Sherwin-Williams Laboratory f willty, were tested to verify the TRICONS corrector resistance.

As discussed in section 3.2.2 the requirements of bt in test are extreme and attempt to simulate, in an accelerated manner, how he container will hold up in an external environment. Both tests are performed in a similar fashion but neither test assures the containers recilience to all a svironments, only to the environments tested. Once again it was the method of test that changed not the design of the container.

6.6 Menifest box.

CMCi states that the company, for the manifest box, · n the approved supplier list does not make the size of manifest box required.

Penz Products, 1320 S. Mentiteld Avenue, Mi rhawaks, Indiana 48544-5707, Phone (219) 255-4736, Steel Division F: celmile, (219) 255-7238.

CONCLUSION

The container currently being procured by the US Arr ly appears to be adequate for the job required. The re-qualification of a new TR CON container would incur costs for qualification testing but not guarantee a sup of product to that currently being procured. The building of the contain are is identical, with some elight vertations of interior features. The methods to testing are similar and all are approved by the American Society for Testing an I Materials and it is the consensus of BAE SYSTEMS that these differences are negligible. The TRICON containers built by CMCI are certified by Lloyds Regi for North America inc, approved by U.S. Coastguard and will perform as recuired and be adequate for transporting and protecting the AAFARS systems from the external environment.

Beeldes the design differences there is the additions advantage of commonstity. Having a different qualified container for the AAFARt systems would require a separate National Stock Number (NSN) along with a ecial merking, tracking and handling to assure that no AAFARS systems inactive entry get shipped in a "nonconforming container". Keeping the containers a sparated would be a logistical nightmere and in all probability the soldier is the field would not recognize the differences between the containers an i would inadvertantly mix them anyway.